

**Appendix O1. Air Quality Monitoring Data and Pollutant
Emissions under Existing Conditions and
the Delta Wetlands Project Alternatives**

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AIR QUALITY MONITORING DATA

Tables O1-1, O1-2, and O1-3 show air quality monitoring data for carbon monoxide (CO), ozone, and particulate matter smaller than or equal to 10 microns in diameter (PM10), respectively. The data presented in these tables represent pollutant levels measured by the California Air Resources Board (ARB) at various stations. These are fixed stations at which pollutant levels are monitored daily. Data for all monitoring stations in Contra Costa and San Joaquin Counties are included; however, few of the monitoring stations are located near the project area. The only Delta monitoring stations are the Bethel Island Road and Pittsburg stations located in Contra Costa County. Data for these stations are discussed under "Affected Environment" in Chapter 30, "Air Quality".

Table O1-1 presents CO monitoring data from Contra Costa and San Joaquin Counties. The peak 1-hour value represents the highest level of CO that was measured over any 1-hour period in a year. The peak 8-hour value represents the highest level of CO that was measured over any 8-hour period. The number of days above the state standard represents the number of days with measured CO levels higher than the state 8-hour CO standard of 9.0 parts per million (ppm). The number of days above the federal standard represents the number of days with measured CO levels higher than the federal 8-hour CO standard of 9.0 ppm.

Table O1-2 presents ozone monitoring data from Contra Costa and San Joaquin Counties. The peak 1-hour value represents the highest level of ozone that was measured over any 1-hour period in a year. The number of days above the state standard represents the number of days with measured ozone levels higher than the state ozone standard of 0.09 ppm. The number of days above the federal standard represents the number of days with

measured ozone levels higher than the federal ozone standard of 0.12 ppm.

Table O1-3 presents PM10 monitoring data from Contra Costa and San Joaquin Counties. The peak 24-hour value represents the highest level of PM10 that was measured over any 24-hour period in a year. The State of California uses the annual geometric mean to represent the average PM10 value over the whole year. However, the geometric mean is calculated differently from the more common arithmetic mean, which is used by the federal government to represent the average PM10 value over the whole year. The arithmetic mean is calculated through addition of all the PM10 measurements taken during the year and division of the total by the number of measurements. The annual geometric mean is calculated in the following manner: measurements of PM10 levels taken during a year are multiplied together, and the nth root of the product is taken, where "n" is the number of measurements taken during the year.

The number of days above the state standard represents the number of days with measured PM10 levels higher than the state 24-hour PM10 standard of 50 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) in a year. The number of days above the federal standard represents the number of days with measured PM10 levels higher than the federal 24-hour PM10 standard of 150 $\mu\text{g}/\text{m}^3$.

EXISTING POLLUTANT EMISSIONS

Tables O1-4 through O1-7 show the estimated amount of CO, reactive organic gases (ROG), nitrogen oxides (NO_x), and PM10, respectively, currently being emitted on and around the project islands. The quantities of each pollutant are broken out by pollutant source.

POLLUTANT EMISSIONS UNDER THE DW PROJECT ALTERNATIVES

Tables O1-8 through O1-15 show the amount of CO, ROG, NO_x, and PM10, respectively, expected to be emitted on and around the project islands under Alternative 1 and Alternative 3. The quantities of each pollutant are separated by pollutant source. Emissions under Alternative 2 are expected to be the same as under Alternative 1; therefore, the estimates shown for Alternative 1 in Tables O1-8 through O1-11 also apply to Alternative 2.

POLLUTANT EMISSIONS UNDER THE NO-PROJECT ALTERNATIVE

Tables O1-16 through O1-19 show the amount of CO, ROG, NO_x, and PM10, respectively, expected to be produced under the No-Project Alternative. The quantities of each pollutant are broken out by pollutant source.

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Table O1-1. Summary of Carbon Monoxide Monitoring Data in the Delta Wetlands Project Area

Location	Parameter	1989	1990	1991	1992	1993
San Joaquin County						
Stockton-Hazelton Street	Peak 1-hour value (ppm)	12.0	17.0	14.0	11.0	10.0
	Peak 8-hour value (ppm)	9.8	11.5	11.4	7.4	6.3
	Days above state/federal standard	1	2	1	0	0
Stockton-4310 Clare	Peak 1-hour value (ppm)	16.0	17.0	15.0	11.0	10.0
	Peak 8-hour value (ppm)	11.0	11.3	11.0	8.3	6.9
	Days above state/federal standard	4	7	2	0	0
Contra Costa County						
Bethel Island Road	Peak 1-hour value (ppm)	3.0	4.0	3.0	5.0	3.0
	Peak 8-hour value (ppm)	2.1	2.8	2.3	3.9	2.0
	Days above state/federal standard	0	0	0	0	0
Concord-2975 Treat	Peak 1-hour value (ppm)	10.0	11.0	9.0	9.0	7.0
	Peak 8-hour value (ppm)	5.6	5.8	5.4	5.4	5.0
	Days above state/federal standard	0	0	0	0	0
Pittsburg	Peak 1-hour value (ppm)	12.0	8.0	7.0	5.0	6.0
	Peak 8-hour value (ppm)	4.8	4.6	4.1	3.9	2.8
	Days above state/federal standard	0	0	0	0	0
Richmond-13th Street	Peak 1-hour value (ppm)	9.0	7.0	7.0	5.0	9.0
	Peak 8-hour value (ppm)	4.1	4.0	4.5	4.1	3.8
	Days above state/federal standard	0	0	0	0	0

Note: Number of days above state/federal standard represents days with peak 8-hour values exceeding the state and federal standard of 9.0 ppm.

Source: ARB 1990-1994.

Table O1-2. Summary of Ozone-Monitoring Data in the Delta Wetlands Project Area

Location	Parameter	1989	1990	1991	1992	1993
San Joaquin County						
Stockton-Hazelton Street	Peak 1-hour value (ppm)	0.11	0.12	0.11	0.11	0.11
	Days above state standard	3	9	10	7	7
Stockton-13523 E. Main	Peak 1-hour value (ppm)	0.12	0.13	0.12	0.11	0.13
	Days above state standard	7	16	22	18	11
Contra Costa County						
Bethel Island Road	Peak 1-hour value (ppm)	0.11	0.12	0.11	0.11	0.11
	Days above state standard	11	5	3	7	3
Concord-2975 Treat	Peak 1-hour value (ppm)	0.11	0.11	0.11	0.11	0.13
	Days above state standard	6	3	4	3	7
Pittsburg	Peak 1-hour value (ppm)	0.11	0.11	0.08	0.11	0.13
	Days above state standard	5	4	0	3	4
Richmond-13th Street	Peak 1-hour value (ppm)	0.10	0.06	0.05	0.08	0.12
	Days above state standard	1	0	0	0	2

Notes: Number of days above state standard represents days with peak 1-hour values exceeding the state standard of 0.09 ppm. Except for 1993, only 1 day in 1 year at one of these stations exceeded the federal standard of 0.12 ppm; that was in 1990 at the Stockton E. Main Station. In 1993, the federal standard was violated on one day at Pittsburg, on one day at Stockton East Main, and on two days at Concord.

Source: ARB 1990-1994.

Table O1-3. Summary of PM10 Monitoring Data in the Delta Wetlands Project Area

Location	Parameter	1989	1990	1991	1992	1993
San Joaquin County						
Stockton-Hazelton Street	Peak 24-hour value ($\mu\text{g}/\text{m}^3$)	146.0	251.0	140.0	145.0	104.0
	Annual geometric mean	44.8	43.3	43.0	39.9	32.0
	Days above state standard	18	22	21	18	13
	Days above federal standard	0	1	0	0	0
Contra Costa County						
Bethel Island Road	Peak 24-hour value ($\mu\text{g}/\text{m}^3$)	104.0	141.0	123.0	73.0	71.0
	Annual geometric mean	25.7	24.2	27.1	22.6	19.3
	Days above state standard	7	7	10	4	2
	Days above federal standard	0	0	0	0	0
Concord-2975 Treat	Peak 24-hour value ($\mu\text{g}/\text{m}^3$)	101.0	147.0	111.0	73.0	81.0
	Annual geometric mean	25.8	20.0	25.2	22.6	19.3
	Days above state standard	9	6	13	8	2
	Days above federal standard	0	0	0	0	0
Richmond-13th Street	Peak 24-hour value ($\mu\text{g}/\text{m}^3$)	115.0	109.0	97.0	55.0	76.0
	Annual geometric mean	26.5	23.0	24.4	23.4	21.3
	Days above state standard	5	5	9	3	3
	Days above federal standard	0	0	0	0	0

Note: State peak 24-hour value standard is $50 \mu\text{g}/\text{m}^3$; federal peak 24-hour value standard is $150 \mu\text{g}/\text{m}^3$.

Source: ARB 1990-1994.

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Table O1-4. CO Emissions on Delta Wetlands Project Islands under Existing Conditions

Emission Source	Bacon Island	Webb Tract	Bouldin Island	Holland Tract
Number of vehicles traveling to recreation areas (trips/day)	2.13	13.62	4.47	2.02
Average emission rate (pounds/trip)	0.66	0.66	0.66	0.66
CO emissions (pounds/day)	1.40	8.99	2.95	1.33
Number of recreational boats (trips/day)	0.00	0.00	0.00	0.00
Average emission rate (pounds/trip)	10.00	10.00	10.00	10.00
CO emissions (pounds/day)	0.00	0.00	0.00	0.00
Number of harvest vehicles (trips/day)	24.20	1.40	5.00	1.20
Average emission rate (pounds/trip)	0.07	0.07	0.07	0.07
CO emissions (pounds/day)	1.69	0.10	0.35	0.08
Gas used for agricultural activities (gallons/day)	170.40	96.55	108.69	53.60
Average emission rate (pounds/gallon)	3.26	3.26	3.26	3.26
CO emissions (pounds/day)	555.50	314.75	354.32	174.72
Diesel used for agricultural activities (gallons/day)	219.20	349.57	393.53	194.06
Average emission rate (pounds/gallon)	0.12	0.12	0.12	0.12
CO emissions (pounds/day)	<u>26.08</u>	<u>41.60</u>	<u>46.83</u>	<u>23.09</u>
Total CO emissions per island (pounds/day)	585	365	404	199
Total CO emissions for all four islands (pounds/day)	1,554			

Notes: Emissions (pounds/day) = units per day x average emission rate in pounds per unit (e.g., trips/day x pounds/trip).
Values have been rounded.

Sources: Emission rates: EPA 1985; trip generation: Forkel pers. comm.

Table O1-5. ROG Emissions on Delta Wetlands Project Islands under Existing Conditions

Emission Source	Bacon Island	Webb Tract	Bouldin Island	Holland Tract
Number of vehicles traveling to recreation areas (trips/day)	2.13	13.62	4.47	2.02
Average emission rate (pounds/trip)	0.05	0.05	0.05	0.05
ROG emissions (pounds/day)	0.11	0.68	0.22	0.10
Number of recreational boats (trips/day)	0.00	0.00	0.00	0.00
Average emission rate (pounds/trip)	3.05	3.05	3.05	3.05
ROG emissions (pounds/day)	0.00	0.00	0.00	0.00
Number of harvest vehicles (trips/day)	24.20	1.40	5.00	1.20
Average emission rate (pounds/trip)	0.03	0.03	0.03	0.03
ROG emissions (pounds/day)	0.61	0.04	0.13	0.03
Gas used for agricultural activities (gallons/day)	170.40	96.55	108.69	53.60
Average emission rate (pounds/gallon)	0.12	0.12	0.12	0.12
ROG emissions (pounds/day)	19.60	11.10	12.50	6.16
Diesel used for agricultural activities (gallons/day)	219.20	349.57	393.53	194.06
Average emission rate (pounds/gallon)	0.06	0.06	0.06	0.06
ROG emissions (pounds/day)	<u>12.30</u>	<u>19.62</u>	<u>22.09</u>	<u>10.89</u>
Total ROG emissions (pounds/day) per island	33	31	35	17
Total ROG emissions (pounds/day) for all four islands	116			

Notes: Emissions (pounds/day) = units per day x average emission rate in pounds per unit (e.g., trips/day x pounds/trip).
Values have been rounded.

Sources: Emission rates: EPA 1985; trip generation: Forkel pers. comm.

Table O1-6. NO_x Emissions on Delta Wetlands Project Islands under Existing Conditions

Emission Source	Bacon Island	Webb Tract	Bouldin Island	Holland Tract
Number of vehicles traveling to recreation areas (trips/day)	2.13	13.62	4.47	2.02
Average emission rate (pounds/trip)	0.08	0.08	0.08	0.08
NO _x emissions (pounds/day)	0.17	1.09	0.36	0.16
Number of recreational boats (trips/day)	0.00	0.00	0.00	0.00
Average emission rate (pounds/trip)	0.02	0.02	0.02	0.02
NO _x emissions (pounds/day)	0.00	0.00	0.00	0.00
Number of harvest vehicles (trips/day)	24.20	1.40	5.00	1.20
Average emission rate (pounds/trip)	0.15	0.15	0.15	0.15
NO _x emissions (pounds/day)	3.71	0.21	0.77	0.18
Gas used for agricultural activities (gallons/day)	170.40	96.55	108.69	53.60
Average emission rate (pounds/gallon)	0.15	0.15	0.15	0.15
NO _x emissions (pounds/day)	25.73	14.58	16.41	8.09
Diesel used for agricultural activities (gallons/day)	219.20	349.57	393.53	194.06
Average emission rate (pounds/gallon)	0.34	0.34	0.34	0.34
NO _x emissions (pounds/day)	<u>73.43</u>	<u>117.11</u>	<u>131.83</u>	<u>65.01</u>
Total NO _x emissions (pounds/day) per island	103	133	149	73
Total NO _x emissions (pounds/day) for all four islands	459			

Notes: Emissions (pounds/day) = units per day x average emission rate in pounds per unit (e.g., trips/day x pounds/trip).
Values have been rounded.

Sources: Emission rates: EPA 1985; trip generation: Forkel pers. comm.

Table O1-7. PM10 Emissions on Delta Wetlands Project Islands under Existing Conditions

Emission Source	Bacon Island	Webb Tract	Bouldin Island	Holland Tract
Number of vehicles traveling to recreation areas (trips/day)	2.13	13.62	4.47	2.02
Average emission rate (pounds/trip) ^a	--	--	--	--
PM10 emissions (pounds/day)	0.00	0.00	0.00	0.00
Area disturbed by farming (acres/day) ^b	86.62	52.76	87.90	40.10
Average emission rate (pounds/acre)	120.00	120.00	120.00	120.00
PM10 emissions (pounds/day)	10,394.40	6,331.00	10,548.00	4,812.00
Number of recreational boats (trips/day)	0.00	0.00	0.00	0.00
Average emission rate (pounds/trip) ^a	--	--	--	--
PM10 emissions (pounds/day)	0.00	0.00	0.00	0.00
Number of harvest vehicles (trips/day)	24.20	1.40	5.00	1.20
Average emission rate (pounds/trip)	0.03	0.03	0.03	0.03
PM10 emissions (pounds/day)	0.61	0.04	0.13	0.03
Gas used for agricultural activities (gallons/day)	170.40	96.55	108.69	53.60
Average emission rate (pounds/gallon)	0.01	0.01	0.01	0.01
PM10 emissions (pounds/day)	1.36	0.77	0.87	0.43
Diesel used for agricultural activities (gallons/day)	219.20	349.57	393.53	194.06
Average emission rate (pounds/gallon)	0.05	0.05	0.05	0.05
PM10 emissions (pounds/day)	<u>10.08</u>	<u>16.08</u>	<u>18.10</u>	<u>8.93</u>
Total PM10 emissions per island	10,406	6,348	10,567	4,821
Total PM10 emissions for all four islands (pounds/day)	32,143			

Table O1-7. Continued

Notes: Emissions (pounds/day) = units per day x average emission rate in pounds per unit (e.g., trips/day x pounds/trip).
Values have been rounded.

▪ Emissions are negligible.

^b It was assumed that there would be 250 working days per year of farming and that an acre of farmland is disturbed an average of five times per year, so the number of acres of land disturbed per day is the total number of acres farmed in the existing year times 5, divided by 250. See text for further explanation.

Sources: Emission rates: EPA 1985; trip generation: Forkel pers. comm.

Table O1-8. CO Emissions under Alternative 1

Emission Source	Bacon Island		Webb Tract		Bouldin Island		Holland Tract	
Construction								
Number of worker vehicle trips to islands (trips/day)	66.60		53.40		30.40		14.20	
Average emission rate (pounds/trip)	0.44		0.66		0.33		0.55	
CO emissions (pounds/day)	29.30		35.24		10.03		7.81	
Number of worker vehicle trips to boat* (trips/day)	3.00		30.80		1.40		0.60	
Average emission rate (pounds/trip)	0.22		0.33		0.17		0.28	
CO emissions (pounds/day)	0.66		10.16		0.23		0.17	
Number of employee boat trips to islands (trips/day)	3.00		12.00		2.40		2.20	
Average boat emission rate (pounds/trip)	6.60		6.60		6.60		6.60	
CO emissions (pounds/day)	19.80		79.20		15.84		14.52	
Number of material delivery truck trips to island (trips/day)	2.00		1.80		0.20		0.08	
Average emission (pounds/trip)	14.18		14.18		14.18		14.18	
CO emissions (pounds/day)	28.35		25.52		2.84		1.13	
Number of barge trips to islands (trips/day)	1.25		1.05		0.50		0.46	
Average emission rate (pounds/trip)	6.20		6.20		6.20		6.20	
CO emissions (pounds/day)	7.78		6.48		3.11		2.85	
Number of hours of rock placement (hours/day)	5.02		4.18		2.01		1.84	
Average placement equipment emission rate (pounds/hour)	1.54		1.54		1.54		1.54	
CO emissions (pounds/day)	7.73		6.44		3.09		2.83	
Quantity of borrow (cubic yards/day)	2,613		5,387		11,893		1,440	
Average emission rate (pounds/cubic yard)	0.03		0.03		0.03		0.03	
CO emissions (pounds/day)	70.56		145.44		321.12		38.88	
Total CO emissions per island (pounds/day)	164		308		356		68	
Total for all four islands	897							
Operation								
Amount of diesel used to pump water (gallons/day)	304		304		0		0	
Average emission rate (pounds/gallon)	0.10		0.10		0.10		0.10	
CO emissions (pounds/day)	31.05		31.05		0.00		0.00	
Number of vehicles traveling to recreation areas (trips/day)	521		521		474		284	
Average emission rate (pounds/trip)	0.66		0.66		0.66		0.66	
CO emissions (pounds/day)	344.18		344.18		312.89		187.73	
Number of recreational boats (trips/day)	323		323		294		176	
Average emission rate (pounds/trip)	13.83		13.83		13.83		13.83	
CO emissions (pounds/day)	4,472.62		4,472.62		4,066.02		2,439.61	
Total CO emissions per island (pounds/day)	4,848		4,848		4,379		2,627	
Total for all four islands	16,702							

Table O1-8. Continued

Emission Source	Bacon Island		Webb Tract		Bouldin Island		Holland Tract	
Agriculture								
Number of harvest vehicles (trips/day)	0.00		0.00		0.00		0.67	
Average emission rate (pounds/trip)	0.07		0.07		0.07		0.07	
CO emissions (pounds/day)		0.00		0.00		0.00		0.05
Gas used for agricultural activities (gallons/day)	0.00		0.00		0.00		29.94	
Average emission rate (pounds/gallon)	3.26		3.26		3.26		3.26	
CO emissions (pounds/day)		0.00		0.00		0.00		97.60
Diesel used for agricultural activities (gallons/day)	0.00		0.00		0.00		108.40	
Average emission rate (pounds/gallon)	0.12		0.12		0.12		0.12	
CO emissions (pounds/day)		<u>0.00</u>		<u>0.00</u>		<u>0.00</u>		<u>12.90</u>
Total CO emissions per island (pounds/day)		0		0		0		111
Total for all four islands	111							

Notes: Emissions for Alternative 2 would be similar to those shown for Alternative 1; see text for explanation.
Emissions (pounds/day) = units per day x average emission rate in pounds per unit (e.g., trips/day x pounds/trip).
Values have been rounded.

* Represents the number of vehicle trips made to boats (not the ferry) that carry workers to islands.

Sources: Emission rates: EPA 1985; construction trip generation: Stewart and Forkel pers. comms.; all other trip generation: Forkel pers. comm.

Table O1-9. ROG Emissions under Alternative 1

Emission Source	Bacon Island	Webb Tract	Bouldin Island	Holland Tract
Construction				
Number of worker vehicle trips to islands (trips/day)	66.60	53.40	30.40	14.20
Average emission rate (pounds/trip)	0.04	0.04	0.04	0.04
ROG emissions (pounds/day)	2.33	2.67	0.76	0.21
Number of worker vehicle trips to boat ^a (trips/day)	3.00	30.8	1.40	0.60
Average emission rate (pounds/trip)	0.02	0.03	0.01	0.01
ROG emissions (pounds/day)	0.05	0.77	0.02	0.00
Number of employee boat trips to islands (trips/day)	3.00	12.00	2.40	2.20
Average boat emission rate (pounds/trip)	2.30	2.30	2.30	2.30
ROG emissions (pounds/day)	6.90	27.60	5.52	5.06
Number of material delivery truck trips to island (trips/day)	2.00	1.80	0.20	0.08
Average emission rate (pounds/trip)	0.97	0.97	0.97	0.97
ROG emissions (pounds/day)	1.93	1.74	0.19	0.08
Number of barge trips to islands (trips/day)	1.25	1.05	0.50	0.46
Average emission rate (pounds/trip)	2.85	2.85	2.85	2.85
ROG emissions (pounds/day)	3.58	2.98	1.43	1.31
Number of hours of rock placement (hours/day)	5.02	4.18	2.01	1.84
Average placement equipment emission rate (pounds/hour)	0.31	0.31	0.31	0.31
ROG emissions (pounds/day)	1.56	1.30	0.62	0.57
Quantity of borrow (cubic yards/day)	2,613	5,387	11,893	1,440
Average emission rate (pounds/cubic yard)	0.01	0.01	0.01	0.01
ROG emissions (pounds/day)	<u>28.75</u>	<u>59.25</u>	<u>130.83</u>	<u>15.84</u>
Total ROG emissions per island (pounds/day)	45	96	139	23
Total for all four islands	304			

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Table O1-9. Continued

Emission Source	Bacon Island	Webb Tract	Bouldin Island	Holland Tract
Operation				
Amount of diesel used to pump water (gallons/day)	304	304	0	0
Average emission rate (pounds/gallon)	0.04	0.04	0.04	0.04
ROG emissions (pounds/day)	10.65	10.65	0.00	0.00
Number of vehicles traveling to recreation areas (trips/day)	521	521	474	284
Average emission rate (pounds/trip)	0.05	0.05	0.05	0.05
ROG emissions (pounds/day)	26.07	26.07	23.70	14.22
Number of recreational boats (trips/day)	323	323	294	176
Average emission rate (pounds/trip)	2.77	2.77	2.77	2.77
ROG emissions (pounds/day)	894.20	894.20	812.91	487.75
Total ROG emissions per island (pounds/day)	931	931	837	502
Total for all four islands	3,200			
Agriculture				
Number of harvest vehicles (trips/day)	0.00	0.00	0.00	0.67
Average emission rate (pounds/trip)	0.03	0.03	0.03	0.03
ROG emissions (pounds/day)	0.00	0.00	0.00	0.02
Gas used for agricultural activities (gallons/day)	0.00	0.00	0.00	29.94
Average emission rate (pounds/gallon)	0.12	0.12	0.12	0.12
ROG emissions (pounds/day)	0.00	0.00	0.00	3.44
Amount of diesel used for agricultural activities (gallons/day)	0.00	0.00	0.00	108.40
Average emission rate (pounds/gallon)	0.06	0.06	0.06	0.06
ROG emissions (pounds/day)	0.00	0.00	0.00	6.08
Total ROG emissions per island (pounds/day)	0	0	0	10
Total for all four islands	10			

Notes: Emissions for Alternative 2 would be similar to those shown for Alternative 1; see text for explanation.
 Emissions (pounds/day) = units per day x average emission rate in pounds per unit (e.g., trips/day x pounds/trip).
 Values have been rounded.

* Represents the number of vehicle trips made to boats (not the ferry) that carry workers to islands.

Sources: Emission rates: EPA 1985; construction trip generation: Stewart and Forkel pers. comms.; all other trip generation: Forkel pers. comm.

Table O1-10. NO_x Emissions under Alternative 1

Emission Source	Bacon Island	Webb Tract	Bouldin Island	Holland Tract
Construction				
Number of worker vehicle trips to islands (trips/day)	66.60	53.40	30.40	14.20
Average emission rate (pounds/trip)	0.06	0.08	0.04	0.03
NO _x emissions (pounds/day)	3.66	4.27	1.22	0.36
Number of worker vehicle trips to boat* (trips/day)	3.00	30.80	1.40	0.60
Average emission rate (pounds/trip)	0.03	0.04	0.02	0.01
NO _x emissions (pounds/day)	0.08	1.23	0.03	0.01
Number of employee boat trips to islands (trips/day)	3.00	12.00	2.40	2.20
Average boat emission rate (pounds/trip)	0.02	0.02	0.02	0.02
NO _x emissions (pounds/day)	0.05	0.18	0.04	0.03
Number of material delivery truck trips to island (trips/day)	2.00	1.80	0.20	0.08
Average emission rate (pounds/trip)	4.72	4.72	4.72	4.72
NO _x emissions (pounds/day)	9.44	8.50	0.94	0.38
Number of barge trips to islands (trips/day)	1.30	1.00	0.50	0.46
Average emission rate (pounds/trip)	17.30	17.30	17.30	17.30
NO _x emissions (pounds/day)	21.70	18.08	8.68	7.96
Number of hours of rock placement (hours/day)	5.02	4.18	2.01	1.84
Average placement equipment emission rate (pounds/hour)	3.68	3.68	3.68	3.68
NO _x emissions (pounds/day)	18.46	15.39	7.39	6.77
Quantity of borrow (cubic yards/day)	2,613	5,387	11,893	1,440
Average emission rate (pounds/cubic yards)	0.09	0.09	0.09	0.09
NO _x emissions (pounds/day)	<u>227.36</u>	<u>468.64</u>	<u>1,034.72</u>	<u>125.28</u>
Total NO _x emissions per island (pounds/day)	281	516	1,053	141
Total for all four islands	1,991			

Table O1-10. Continued

Emission Source	Bacon Island	Webb Tract	Bouldin Island	Holland Tract
Operation				
Amount of diesel used to pump water (gallons/day)	304	304	0	0
Average emission rate (pounds/gallon)	0.47	0.47	0.47	0.47
NO _x emissions (pounds/day)	143.06	143.06	0.00	0.00
Number of vehicles traveling to recreation areas (trips/day)	521	521	474	284
Average emission rate (pounds/trip)	0.08	0.08	0.08	0.08
NO _x emissions (pounds/day)	41.72	41.72	37.93	22.76
Number of recreational boats (trips/day)	323	323	294	176
Average emission rate (pounds/trip)	5.36	5.36	5.36	5.36
NO _x emissions (pounds/day)	<u>1,733.40</u>	<u>1,733.40</u>	<u>1,575.80</u>	<u>945.50</u>
Total NO _x emissions per island (pounds/day)	1,918	1,918	1,614	968
Total for all four islands	6,418			
Agriculture				
Number of harvest vehicles (trips/day)	0.00	0.00	0.00	0.07
Average emission rate (pounds/trip)	0.15	0.15	0.15	0.15
NO _x emissions (pounds/day)	0.00	0.00	0.00	0.10
Gas used for agricultural activities (gallons/day)	0.00	0.00	0.00	29.94
Average emission rate (pounds/gallon)	0.15	0.15	0.15	0.15
NO _x emissions (pounds/day)	0.00	0.00	0.00	4.52
Diesel used for agricultural activities (gallons/day)	0.00	0.00	0.00	108.40
Average emission rate (pounds/gallon)	0.34	0.34	0.34	0.34
NO _x emissions (pounds/day)	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>36.31</u>
Total NO _x emissions per island (pounds/day)	0	0	0	41
Total for all four islands	41			

Note: Emissions for Alternative 2 would be similar to those shown for Alternative 1; see text for explanation.
 Emissions (pounds/day) = units per day x average emission rate in pounds per unit (e.g., trips/day x pounds/trip).
 Values have been rounded.

* Represents the number of vehicle trips made to boats (not the ferry) that carry workers to islands.

Sources: Emission rates: EPA 1985; construction trip generation: Stewart and Forkel pers. comms.; all other trip generation: Forkel pers. comm.

C-062500

Table O1-11. PM10 Emissions under Alternative 1

	Bacon Island		Webb Tract		Bouldin Island		Holland Tract	
Construction								
Number of worker vehicle trips to islands (trips/day)	66.60		53.40		30.40		14.20	
Average emission rate (pounds/trip) ^a	--		--		--		--	
PM10 emissions (pounds/day)		0.00		0.00		0.00		0.00
Number of worker vehicle trips to boat ^b (trips/day)	3.00		30.80		1.40		0.60	
Average emission rate (pounds/trip) ^a	--		--		--		--	
PM10 emissions (pounds/day)		0.00		0.00		0.00		0.00
Number of employee boat trips to islands (trips/day)	3.00		12.00		2.40		2.20	
Average boat emission rate (pounds/trip) ^a	--		--		--		--	
PM10 emissions (pounds/day)		0.00		0.00		0.00		0.00
Number of material delivery truck trips to island (trips/day)	2.00		1.80		0.20		0.08	
Average emission rate (pounds/trip)	0.18		0.18		0.18		0.18	
PM10 emissions (pounds/day)		0.35		0.32		0.04		0.01
Acres disturbed by construction (acres/day)	14.77		14.58		15.96		11.33	
Average emission rate (pounds/acre)	120		120		120		120	
PM10 emissions (pounds/day)		1,772		1,750		1,915		1,360
Number of barge trips to islands (trips/day)	1.25		1.05		0.50		0.46	
Average emission rate (pounds/trip)	5.20		5.20		5.20		5.20	
PM10 emissions (pounds/day)		6.52		5.44		2.61		2.39
Number of hours of rock placement (hours/day)	5.02		4.18		2.01		1.84	
Average placement equipment emission rate (pounds/hour)	0.30		0.30		0.30		0.30	
PM10 emissions (pounds/day)		1.51		1.25		0.60		0.55
Quantity of borrow (cubic yards/day)	2,613		5,387		11,893		1,440	
Average emission rate (pounds/cubic yard)	0.01		0.01		0.01		0.01	
PM10 emissions (pounds/day)		<u>20.91</u>		<u>43.09</u>		<u>95.15</u>		<u>11.52</u>
Total PM10 emissions per island (pounds/day)		1,802		1,800		2,014		1,374
Total for all four islands	6,990							

C-062501

Table O1-11. Continued

	Bacon Island		Webb Tract		Bouldin Island		Holland Tract	
Operation								
Amount of diesel used to pump water (gallons/day)	304		304		0		0	
Average emission rate (pounds/gallon)	0.03		0.03		0.03		0.03	
PM10 emissions (pounds/day)		10.35		10.35		0.00		0.00
Number of vehicles traveling to recreation areas (trips/day)	521		521		474		284	
Average emission rate (pounds/trip)*	--		--		--		--	
PM10 emissions (pounds/day)		0.00		0.00		0.00		0.00
Number of recreational boats (trips/day)	323		323		294		176	
Average emission rate (pounds/trip)*	--		--		--		--	
PM10 emissions (pounds/day)		<u>0.00</u>		<u>0.00</u>		<u>0.00</u>		<u>0.00</u>
Total PM10 emissions per island (pounds/day)		10		10		0		0
Total for all four islands	21							
Agriculture								
Area disturbed by farming (acres/day)	0.00		0.00		36.09		21.92	
Average emission rate (pounds/acre)	120		120		120		120	
PM10 emissions (pounds/day)		0.00		0.00		4,331		2,630
Number of harvest vehicles (trips/day)	0.00		0.00		0.00		0.67	
Average emission rate (pounds/trip)	0.03		0.03		0.03		0.03	
PM10 emissions (pounds/day)		0.00		0.00		0.00		0.02
Gas used for agricultural activities (gallons/day)	0.00		0.00		0.00		29.94	
Average emission rate (pounds/gallon)	0.01		0.01		0.01		0.01	
PM10 emissions (pounds/day)		0.00		0.00		0.00		0.24
Diesel used for agricultural activities (gallons/day)	0.00		0.00		0.00		108.40	
Average emission rate (pounds/gallon)	0.05		0.05		0.05		0.05	
PM10 emissions (pounds/day)		<u>0.00</u>		<u>0.00</u>		<u>0.00</u>		<u>4.99</u>
Total PM10 emissions per island (pounds/day)		0		0		4,331		2,635
Total for all four islands	6,966							

Note: Emissions for Alternative 2 would be similar to those shown for Alternative 1; see text for explanation.
Emissions (pounds/day) = units per day x average emission rate in pounds per unit (e.g., trips/day x pounds/trip).
Values have been rounded.

^a Emissions are negligible.

^b Represents the number of vehicle trips made to boats (not the ferry) that carry workers to islands.

Sources: Emission rates: EPA 1985; construction trip generation: Stewart and Forkel pers. comms.; all other trip generation: Forkel pers. comm.

C-062502

Table O1-12. CO Emissions under Alternative 3

Emissions Source	Bacon Island	Webb Tract	Bouldin Island	Holland Tract
Construction				
Number of worker vehicle trips to islands (trips/day)	66.60	53.40	151.40	102.60
Average emission rate (pounds/trip)	0.44	0.66	0.33	0.55
CO emissions (pounds/day)	29.30	35.24	49.96	56.43
Number of worker vehicle trips to boat* (trips/day)	3.00	30.80	7.00	4.40
Average emission rate (pounds/trip)	0.22	0.33	0.17	0.28
CO emissions (pounds/day)	0.66	10.16	1.16	1.21
Number of employee boat trips to islands (trips/day)	3.00	12.00	12.00	15.80
Average boat emission rate (pounds/trip)	6.60	6.60	6.60	6.60
CO emissions (pounds/day)	19.80	79.20	79.20	104.28
Number of material delivery truck trips to island (trips/day)	2.00	1.80	0.86	1.44
Average emission (pounds/trip)	14.18	14.18	14.18	14.18
CO emissions (pounds/day)	28.35	25.52	12.25	20.41
Number of barge trips to islands (trips/day)	1.25	1.05	0.60	0.88
Average emission rate (pounds/trip)	6.20	6.20	6.20	6.20
CO emissions (pounds/day)	7.78	6.48	3.73	5.44
Number of hours of rock placement (hours/day)	5.02	4.18	2.41	3.51
Average placement equipment emission rate (pounds/hour)	1.54	1.54	1.54	1.54
CO emissions (pounds/day)	7.73	6.44	3.71	5.41
Quantity of borrow (cubic yards/day)	2,613	5,387	35,616	2,400
Average emission rate (pounds/cubic yard)	0.03	0.03	0.03	0.03
CO emissions (pounds/day)	70.56	145.44	961.63	64.80
Total CO emissions per island (pounds/day)	164	308	1,112	258
Total for all four islands	1,842			

C-062503

Table O1-12. Continued

Emissions Source	Bacon Island		Webb Tract		Bouldin Island		Holland Tract	
Operation								
Amount of diesel used to pump water (gallons/day)	228		228		228		228	
Average emission rate (pounds/gallon)	0.10		0.10		0.10		0.10	
CO emissions (pounds/day)	23.21		23.21		23.21		23.21	
Number of vehicles traveling to recreation areas (trips/day)	521		521		474		379	
Average emission rate (pounds/trip)	0.66		0.66		0.66		0.66	
CO emissions (pounds/day)	344.18		344.18		312.89		250.31	
Number of recreational boats (trips/day)	323		323		294		234	
Average emission rate (pounds/trip)	13.83		13.83		13.83		13.83	
CO emissions (pounds/day)	4,472.62		4,472.62		4,066.02		3,252.82	
Total CO emissions per island (pounds/day)	4,840		4,840		4,402		3,526	
Total for all four islands	17,608							
Agriculture								
Number of harvest vehicles (trips/day)	0.00		0.00		0.00		0.00	
Average emission rate (pounds/trip)	0.07		0.07		0.07		0.07	
CO emissions (pounds/day)	0.00		0.00		0.00		0.00	
Gas used for agricultural activities (gallons/day)	0.00		0.00		0.00		0.00	
Average emission rate (pounds/gallon)	3.26		3.26		3.26		3.26	
CO emissions (pounds/day)	0.00		0.00		0.00		0.00	
Diesel used for agricultural activities (gallons/day)	0.00		0.00		0.00		0.00	
Average emission rate (pounds/gallon)	0.12		0.12		0.12		0.12	
CO emissions (pounds/day)	0.00		0.00		0.00		0.00	
Total CO emissions per island (pounds/day)	0		0		0		0	
Total for all four islands	0							

* Represents the number of vehicle trips made to boats (not the ferry) that carry workers to islands.

Notes: Emissions (pounds/day) = units per day x average emission rate in pounds per unit (e.g., trips/day x pounds/trip).
Values have been rounded.

Sources: Emission rates: EPA 1985; construction trip generation: Stewart and Forkel pers. comms.; all other trip generation: Forkel pers. comm.

C-062504

Emission Source	Bacon Island		Webb Tract		Bouldin Island		Holland Tract	
Construction								
Number of worker vehicle trips to islands (trips/day)	66.60	53.40	151.40	102.60				
Average emission rate (pounds/trip)	0.04	0.05	0.03	0.02				
ROG emissions (pounds/day)	2.33	3.79	3.79	1.54				
Number of worker vehicle trips to boat* (trips/day)	3.00	30.80	7.00	4.40				
Average emission rate (pounds/trip)	0.02	0.03	0.01	0.01				
ROG emissions (pounds/day)	0.05	0.77	0.09	0.03				
Number of employee boat trips to islands (trips/day)	3.00	12.00	12.00	15.80				
Average boat emission rate (pounds/trip)	2.30	2.30	2.30	2.30				
ROG emissions (pounds/day)	6.90	27.6	27.6	36.34				
Number of material delivery truck trips to island (trips/day)	2.00	1.80	0.86	1.44				
Average emission rate (pounds/trip)	0.97	0.97	0.97	0.97				
ROG emissions (pounds/day)	1.93	1.74	0.83	1.39				
Number of barge trips to islands (trips/day)	1.25	1.05	0.60	0.88				
Average emission rate (pounds/trip)	2.85	2.85	2.85	2.85				
ROG emissions (pounds/day)	3.58	2.98	1.72	2.50				
Number of hours of rock placement (hours/day)	5.02	4.18	2.41	3.51				
Average placement equipment emission rate (pounds/hour)	0.31	0.31	0.31	0.31				
ROG emissions (pounds/day)	1.56	1.30	0.75	1.09				
Quantity of borrow (cubic yards/day)	2,613	5,387	35,616	2,400				
Average emission rate (pounds/cubic yard)	0.01	0.01	0.01	0.01				
ROG emissions (pounds/day)	28.75	59.25	391.78	26.40				
Total ROG emissions per island (pounds/day)	45	96	427	69				
Total for all four islands	637							

C-062505

Table O1-13. Continued

Emission Source	Bacon Island	Webb Tract	Bouldin Island	Holland Tract
Operation				
Amount of diesel used to pump water (gallons/day)	228	228	228	228
Average emission rate (pounds/gallon)	0.04	0.04	0.04	0.04
ROG emissions (pounds/day)	7.96	7.96	7.96	7.96
Number of vehicles traveling to recreation areas (trips/day)	521	521	474	379
Average emission rate (pounds/trip)	0.05	0.05	0.05	0.05
ROG emissions (pounds/day)	26.07	26.07	23.70	18.96
Number of recreational boats (trips/day)	323	323	294	235
Average emission rate (pounds/trip)	2.77	2.77	2.77	2.77
ROG emissions (pounds/day)	894.20	894.20	812.91	650.33
Total ROG emissions per island (pounds/day)	928	928	845	677
Total for all four islands	3,378			
Agriculture				
Number of harvest vehicles (trips/day)	0.00	0.00	0.00	0.00
Average emission rate (pounds/trip)	0.03	0.03	0.03	0.03
ROG emissions (pounds/day)	0.00	0.00	0.00	0.00
Gas used for agricultural activities (gallons/day)	0.00	0.00	0.00	0.00
Average emission rate (pounds/gallon)	0.12	0.12	0.12	0.12
ROG emissions (pounds/day)	0.00	0.00	0.00	0.00
Amount of diesel used for agricultural activities (gallons/day)	0.00	0.00	0.00	0.00
Average emission rate (pounds/gallon)	0.06	0.06	0.06	0.06
ROG emissions (pounds/day)	0.00	0.00	0.00	0.00
Total ROG emissions per island (pounds/day)	0	0	0	0
Total for all four islands	0			

Notes: Emissions (pounds/day) = units per day x average emission rate in pounds per unit (e.g., trips/day x pounds/trip).
Values have been rounded.

* Represents the number of vehicle trips made to boats (not the ferry) that carry workers to islands.

Sources: Emission rates: EPA 1985; construction trip generation: Stewart and Forkel pers. comms.; all other trip generation: Forkel pers. comm.

Table O1-14. NO_x Emissions under Alternative 3

	Bacon Island		Webb Tract		Bouldin Island		Holland Tract	
Construction								
Number of worker vehicle trips to islands (trips/day)	66.60		53.40		151.40		102.60	
Average emission rate (pounds/trip)	0.06		0.08		0.04		0.03	
NO _x emissions (pounds/day)		3.66		4.27		6.06		2.57
Number of worker vehicle trips to boat* (trips/day)	3.00		30.80		7.00		4.40	
Average emission rate (pounds/trip)	0.03		0.04		0.02		0.01	
NO _x emissions (pounds/day)		0.08		1.23		0.14		0.06
Number of employee boat trips to islands (trips/day)	3.00		12.00		12.00		15.80	
Average boat emission rate (pounds/trip)	0.02		0.02		0.02		0.02	
NO _x emissions (pounds/day)		0.05		0.18		0.18		0.24
Number of material delivery truck trips to island (trips/day)	2.00		1.80		0.86		1.44	
Average emission rate (pounds/trip)	4.72		4.72		4.72		4.72	
NO _x emissions (pounds/day)		9.44		8.50		4.08		6.61
Number of barge trips to islands (trips/day)	1.30		1.04		0.60		0.90	
Average emission rate (pounds/trip)	17.30		17.30		17.30		17.30	
NO _x emissions (pounds/day)		21.70		18.08		10.42		15.19
Number of hours of rock placement (hours/day)	5.02		4.18		2.41		3.51	
Average placement equipment emission rate (pounds/hour)	3.68		3.68		3.68		3.68	
NO _x emissions (pounds/day)		18.46		15.39		8.86		12.93
Quantity of borrow (cubic yards/day)	2,613		5,387		35,616		2,400	
Average emission rate (pounds/cubic yards)	0.09		0.09		0.09		0.09	
NO _x emissions (pounds/day)		227.36		468.64		3,098.60		208.80
Total NO _x emissions per island (pounds/day)		281		516		3,131		244
Total for all four islands	4,172							

C-062507

Table O1-14. Continued

	Bacon Island		Webb Tract		Bouldin Island		Holland Tract	
Operation								
Amount of diesel used to pump water (gallons/day)	228		228		228		228	
Average emission rate (pounds/gallon)	0.47		0.47		0.47		0.47	
NO _x emissions (pounds/day)		106.94		106.94		106.94		106.94
Number of vehicles traveling to recreation areas (trips/day)	521		521		474		379	
Average emission rate (pounds/trip)	0.08		0.08		0.08		0.08	
NO _x emissions (pounds/day)		41.72		41.72		37.93		30.34
Number of recreational boats (trips/day)	323		323		294		235	
Average emission rate (pounds/trip)	5.36		5.36		5.36		5.36	
NO _x emissions (pounds/day)		<u>1,733.40</u>		<u>1,733.40</u>		<u>1,575.80</u>		<u>1,260.70</u>
Total NO _x emissions per island (pounds/day)		1,882		1,882		1,721		1,398
Total for all four islands	6,883							
Agriculture								
Number of harvest vehicles (trips/day)	0.00		0.00		0.00		0.00	
Average emission rate (pounds/trip)	0.15		0.15		0.15		0.15	
NO _x emissions (pounds/day)		0.00		0.00		0.00		0.00
Gas used for agricultural activities (gallons/day)	0.00		0.00		0.00		0.00	
Average emission rate (pounds/gallon)	0.15		0.15		0.15		0.15	
NO _x emissions (pounds/day)		0.00		0.00		0.00		0.00
Diesel used for agricultural activities (gallons/day)	0.00		0.00		0.00		0.00	
Average emission rate (pounds/gallon)	0.34		0.34		0.34		0.34	
NO _x emissions (pounds/day)		<u>0.00</u>		<u>0.00</u>		<u>0.00</u>		<u>0.00</u>
Total NO _x emissions per island (pounds/day)		0		0		0		0
Total for all four islands	0							

Note: Emissions (pounds/day) = units per day x average emission rate in pounds per unit (e.g., trips/day x pounds/trip).
Values have been rounded.

* Represents the number of vehicle trips made to boats (not the ferry) that carry workers to islands.

Sources: Emission rates: EPA 1985; construction trip generation: Stewart and Forkel pers. comms.; all other trip generation: Forkel pers. comm.

Table O1-15. PM10 Emissions under Alternative 3

	Bacon Island		Webb Tract		Bouldin Island		Holland Tract	
Construction								
Number of worker vehicle trips to islands (trips/day)	66.60		53.40		151.40		102.60	
Average emission rate (pounds/trip)*	--		--		--		--	
PM10 emissions (pounds/day)		0.00		0.00		0.00		0.00
Number of worker vehicle trips to boat ^b (trips/day)	3.00		30.80		7.00		4.40	
Average emission rate (pounds/trip)*	--		--		--		--	
PM10 emissions (pounds/day)		0.00		0.00		0.00		0.00
Number of employee boat trips to islands (trips/day)	3.00		12.00		12.00		15.80	
Average boat emission rate (pounds/trip)*	--		--		--		--	
PM10 emissions (pounds/day)		0		0		0		0
Number of material delivery truck trips to island (trips/day)	2.00		1.80		0.86		1.44	
Average emission rate (pounds/trip)	0.18		0.18		0.18		0.18	
PM10 emissions (pounds/day)		0.35		0.32		0.15		0.25
Acres disturbed by construction (acres/day)	14.77		14.58		9.58		11.33	
Average emission rate (pounds/acre)	120		120		120		120	
PM10 emissions (pounds/day)		1,772		1,750		1,149		1,360
Number of barge trips to islands (trips/day)	1.25		1.05		0.60		0.88	
Average emission rate (pounds/trip)	5.20		5.20		5.20		5.20	
PM10 emissions (pounds/day)		6.52		5.44		3.13		4.57
Number of hours of rock placement (hours/day)	5.02		4.18		2.41		3.51	
Average placement equipment emission rate (pounds/hour)	0.30		0.30		0.30		0.30	
PM10 emissions (pounds/day)		1.51		1.25		0.72		1.05
Quantity of borrow (cubic yards/day)	2,613		5,387		35,616		2,400	
Average emission rate (pounds/cubic yard)	0.01		0.01		0.01		0.01	
PM10 emissions (pounds/day)		<u>20.91</u>		<u>43.09</u>		<u>284.93</u>		<u>19.20</u>
Total PM10 emissions per island (pounds/day)		1,802		1,800		1,438		1,385
Total for all four islands	6,425							

Table O1-15. Continued

	Bacon Island		Webb Tract		Bouldin Island		Holland Tract	
Operation								
Amount of diesel used to pump water (gallons/day)	228		228		228		228	
Average emission rate (pounds/gallon)	0.03		0.03		0.03		0.03	
PM10 emissions (pounds/day)		7.74		7.74		7.74		7.74
Number of vehicles traveling to recreation areas (trips/day)	521		521		474		379	
Average emission rate (pounds/trip) ^a	--		--		--		--	
PM10 emissions (pounds/day)		0.00		0.00		0.00		0.00
Number of recreational boats (trips/day)	323		323		294		235	
Average emission rate (pounds/trip) ^a	--		--		--		--	
PM10 emissions (pounds/day)		<u>0.00</u>		<u>0.00</u>		<u>0.00</u>		<u>0.00</u>
Total PM10 emissions per island (pounds/day)		8		8		8		8
Total for all four islands	31							
Agriculture								
Area disturbed by farming (acres/day)	0.00		0.00		0.00		0.00	
Average emission rate (pounds/acre)	120		120		120		120	
PM10 emissions (pounds/day)		0.00		0.00		0.00		0.00
Number of harvest vehicles (trips/day)	0.00		0.00		0.00		0.00	
Average emission rate (pounds/trip)	0.03		0.03		0.03		0.03	
PM10 emissions (pounds/day)		0.00		0.00		0.00		0.00
Gas used for agricultural activities (gallons/day)	0.00		0.00		0.00		0.00	
Average emission rate (pounds/gallon)	0.01		0.01		0.01		0.01	
PM10 emissions (pounds/day)		0.00		0.00		0.00		0.00
Diesel used for agricultural activities (gallons/day)	0.00		0.00		0.00		0.00	
Average emission rate (pounds/gallon)	0.05		0.05		0.05		0.05	
PM10 emissions (pounds/day)		<u>0.00</u>		<u>0.00</u>		<u>0.00</u>		<u>0.00</u>
Total PM10 emissions per island (pounds/day)		0		0		0		0
Total for all four islands	0							

Note: Emissions (pounds/day) = units per day x average emission rate in pounds per unit (e.g., trips/day x pounds/trip).
Values have been rounded.

^a Emissions are negligible.

^b Represents the number of vehicle trips made to boats (not the ferry) that carry workers to islands.

Sources: Emission rates: EPA 1985; construction trip generation: Stewart and Forkel pers. comms.; all other trip generation: Forkel pers. comm.

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Table O1-16. CO Emissions on DW Project Islands under the No-Project Alternative

Emission Source	Bacon Island	Webb Tract	Bouldin Island	Holland Tract
Number of vehicles traveling to recreation areas (trips/day)	120.70	119.55	130.55	91.85
Average emission rate (pounds/trip)	0.66	0.66	0.66	0.66
CO emissions (pounds/day)	79.66	78.91	86.17	60.62
Number of recreational boats (trips/day)	0.00	0.00	0.00	0.00
Average emission rate (pounds/trip)	10.00	10.00	10.00	10.00
CO emissions (pounds/day)	0.00	0.00	0.00	0.00
Number of harvest vehicles (trips/day)	61.47	3.56	12.70	3.05
Average emission rate (pounds/trip)	0.07	0.07	0.07	0.07
CO emissions (pounds/day)	4.30	0.25	0.89	0.21
Gas used for agricultural activities (gallons/day)	432.82	245.23	276.07	136.13
Average emission rate (pounds/gallon)	3.26	3.26	3.26	3.26
CO emissions (pounds/day)	1,410.98	799.46	899.98	443.80
Diesel used for agricultural activities (gallons/day)	556.77	887.91	999.57	492.91
Average emission rate (pounds/gallon)	0.12	0.12	0.12	0.12
CO emissions (pounds/day)	<u>66.26</u>	<u>105.66</u>	<u>118.95</u>	<u>58.66</u>
Total CO emissions per island (pounds/day)	1,561	984	1,106	563
Total CO emissions for all four islands	4,215			

Notes: Emissions (pounds/day) = units per day x average emission rate in pounds per unit (e.g., trips/day x pounds/trip).

Values have been rounded.

Sources: Emission rates: EPA 1985; trip generation: Forkel pers. comm.

Table O1-17. ROG Emissions on DW Project Islands under the No-Project Alternative

Emission Source	Bacon Island	Webb Tract	Bouldin Island	Holland Tract
Number of vehicles traveling to recreation areas (trips/day)	120.70	119.55	130.55	91.85
Average emission rate (pounds/trip)	0.05	0.05	0.05	0.05
ROG emissions (pounds/day)	6.04	5.98	6.53	4.59
Number of recreational boats (trips/day)	0.00	0.00	0.00	0.00
Average emission rate (pounds/trip)	3.05	3.05	3.05	3.05
ROG emissions (pounds/day)	0.00	0.00	0.00	0.00
Number of harvest vehicles (trips/day)	61.47	3.56	12.70	3.05
Average emission rate (pounds/trip)	0.03	0.03	0.03	0.03
ROG emissions (pounds/day)	1.54	0.09	0.32	0.08
Gas used for agricultural activities (gallons/day)	432.82	245.23	276.07	136.13
Average emission rate (pounds/gallon)	0.12	0.12	0.12	0.12
ROG emissions (pounds/day)	49.77	28.20	31.75	15.66
Diesel used for agricultural activities (gallons/day)	556.77	887.91	999.57	492.91
Average emission rate (pounds/gallon)	0.06	0.06	0.06	0.06
ROG emissions (pounds/day)	<u>31.25</u>	<u>49.83</u>	<u>56.10</u>	<u>27.66</u>
Total ROG emissions per island (pounds/day)	89	84	95	48
Total ROG emissions for all four islands	315			

Notes: Emissions (pounds/day) = units per day x average emission rate in pounds per unit (e.g., trips/day x pounds/trip).

Values have been rounded.

Sources: Emission rates: EPA 1985; trip generation: Forkel pers. comm.

Table O1-18. NO_x Emissions on DW Project Islands under the No-Project Alternative

Emission Source	Bacon Island	Webb Tract	Bouldin Island	Holland Tract
Number of vehicles traveling to recreation areas (trips/day)	120.70	119.55	130.55	91.85
Average emission rate (pounds/trip)	0.08	0.08	0.08	0.08
NO _x emission (pounds/day)	9.66	9.56	10.44	7.35
Number of recreational boats (trips/day)	0.00	0.00	0.00	0.00
Average emission rate (pounds/trip)	0.02	0.02	0.02	0.02
NO _x emission (pounds/day)	0.00	0.00	0.00	0.00
Number of harvest vehicles (trips/day)	61.47	3.56	12.70	3.05
Average emission rate (pounds/trip)	0.15	0.15	0.15	0.15
NO _x emission (pounds/day)	9.44	0.55	1.95	0.47
Gas used for agricultural activities (gallons/day)	432.82	245.23	276.07	136.13
Average mission rate (pounds/gallon)	0.15	0.15	0.15	0.15
NO _x emission (pounds/day)	65.36	37.03	41.69	20.56
Diesel used for agricultural activities (gallons/day)	556.77	887.91	999.57	492.91
Average emission rate (pounds/gallon)	0.34	0.34	0.34	0.34
NO _x emission (pounds/day)	<u>186.52</u>	<u>297.45</u>	<u>334.86</u>	<u>165.13</u>
Total NO _x emissions per island (pounds/day)	271	345	389	194
Total NO _x emissions for all four islands	1,198			

Notes: Emissions (pounds/day) = units per day x average emission rate in pounds per unit (e.g., trips/day x pounds/trip).

Values have been rounded.

Sources: Emission rates: EPA 1985; trip generation: Forkel pers. comm.

Table O1-19. PM10 Emissions on DW Project Islands under the No-Project Alternative

Emission Source	Bacon Island	Webb Tract	Bouldin Island	Holland Tract
Number of vehicles traveling to recreation areas (trips/day)	120.70	119.55	130.55	91.85
Average emission rate (pounds/trip) ^a	--	--	--	--
PM10 emissions (pounds/day)	0.00	0.00	0.00	0.00
Area disturbed by farming (acres/day) ^b	220.01	134.01	223.27	101.85
Average emission rate (pounds/acre)	120	120	120	120
PM10 emissions (pounds/day)	26,402	16,081	26,792	12,222
Number of recreational boats (trips/day)	0.00	0.00	0.00	0.00
Average emission rate (pounds/trip) ^a	--	--	--	--
PM10 emissions (pounds/day)	0.00	0.00	0.00	0.00
Number of harvest vehicles (trips/day)	61.47	3.56	12.70	3.05
Average emission rate (pounds/trip)	0.03	0.03	0.03	0.03
PM10 emissions (pounds/day)	1.54	0.09	0.32	0.08
Gas used for agricultural activities (gallons/day)	432.82	245.23	276.07	136.13
Average mission rate (pounds/gallon)	0.01	0.01	0.01	0.01
PM10 emissions (pounds/day)	3.46	1.96	2.21	1.09
Diesel used for agricultural activities (gallons/day)	556.77	887.91	999.57	492.91
Average emission rate (pounds/gallon)	0.05	0.05	0.05	0.05
PM10 emissions (pounds/day)	<u>25.61</u>	<u>40.84</u>	<u>45.98</u>	<u>22.67</u>
Total PM10 emissions per island (pounds/day)	26,432	26,835	12,271	16,105
Total PM10 emissions for all four islands (pounds/day)	81,643			

Notes: Emissions (pounds/day) = units per day x average emission rate in pounds per unit (e.g., trips/day x pounds/trip).

Values have been rounded.

Table O1-19. Continued

^a Emissions are negligible.

^b It was assumed that there would be 250 working days per year of farming and that an acre of farmland is disturbed an average of five times per year, so the number of acres of land disturbed per day is the total number of acres farmed in the existing year times 5, divided by 250. See text for further explanation.

Sources: Emission rates: EPA 1985; trip generation: Forkel pers. comm.
